

MICHELLE M. VALKANAS

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EDUCATION

Ph.D. in Biology, Duquesne University, Pittsburgh, PA 2020
Bachelor of Science in Biology, Minor in Mathematics, Duquesne University, Pittsburgh, PA 2014

EXPERIMENTAL DESIGN AND DATA COLLECTION EXPERIENCE

Graduate Research Assistant August 2016 – 2020

Duquesne University, Dept. Biological Sciences, Dr. Nancy Trun, Principle Investigator

Work Hours: Variable; 40+ hours/week

Thesis: *Identifying the effects naturally-forming bacterial communities have on the efficiency of passive remediation systems built to treat abandoned mine drainage*

- Study passive remediation systems engineered to treat abandoned mine drainage using classic microbiology, molecular biology, and biotechnology to better understand how the bacterial communities impact efficiency
- Study Biogeochemical cycling with an emphasis on iron and sulfur cycles
- Used next-generation sequencing to identify microbial composition and analyzed using python, Qiime, and R
- **Presented 31 oral and poster presentations reporting scientific findings**

Researcher August 2014 – August 2016

Duquesne University, Dept. Biological Sciences, Dr. Nancy Trun

Work Hours: T/Th 5-8; 6 hours/week

- Designed, tested, and implemented protocols for isolating high molecular weight DNA from soil samples
- Performed 16S rRNA sequencing to identify microbial composition

Lab Technician February 2015 – August 2016

RJ Lee Group, Monroeville, PA

Work Hours: M-F 6:30am-3:00pm; 40 hours/week

- Performed sample digestion by way of acid, water leach, and microwave to be analyzed by ion chromatography (IC), inductively coupled plasma atomic emission spectroscopy (ICP-AES), inductively coupled plasma mass spectrometry (ICP-MS), and flame atomic absorption (FLAA)
- Prepared and analyzed mercury samples using cold vapor atomic absorption spectroscopy (CVAA)
- Responsible for proper chain-of-custody, including sample handling, processing and reporting of results
- Used laboratory information management system (LIMS) to batch, analyze, and peer review samples

Chemical Analyst Intern August 2013 – May 2014

CWM Environmental, Kittanning, PA

Work Hours: MWF 7:30am-4:00pm (MW), 7:30am-12:30pm (F); 21 hours/week

- Performed analytical testing of water samples testing Biochemical Oxygen Demand, Total Suspended Solids, Total Dissolved Solids, Percent Solids, pH, Alkalinity, Acidity, and Specific Conductance
- Responsible for proper chain-of-custody, including sample handling, processing and reporting of results

ADVISORY EXPERIENCE

Adjunct Instructor 2020

California University of Pennsylvania

- General Microbiology, Fall 2020 (enrollment 43; required course for biology majors)
- Molecular Biology Lab, Fall 2020 (enrollment 9; elective course for biology majors)

Teaching Assistant August 2016 – 2020

Duquesne University

- Super Lab IV: Microbiology, Spring 2017-2019 (enrollment 16; biology elective for juniors and seniors)
- Super Lab I: Experimental Biology, Fall 2017-2019 (enrollment 16; required course for biology majors)
- Life Processes Lab, Fall 2016 (enrollment 32; required course for freshman non-biology health majors)

Mentor

August 2016 – Present

Duquesne University

- Trun Lab (4 undergraduate and 2 graduate students)
- Peer Mentor Program (1 student)
- Undergraduate Research Program Ethics Forum Mentor (5 students)

La Roche University

- Undergraduate honors student (2 student)

Citizens Science Lab

- SIGMA Mentor (2 students)

PROFESSIONAL LEADERSHIP SKILLS

Super STEM presented by Duquesne University and NCSE

Carnegie Library of Pittsburgh, Hill District Branch

Director and Coordinator (May 2019 – Present)

- Developed and implemented an after-school STEM enrichment program at the inner-city library in the Hill District for 10-20 elementary school students
- Coordinate with diverse stakeholders on an ongoing basis to provide STEM outreach activities for the program, including the Carnegie Library and The National Center of Science Education
- Manage a team of 4-6 volunteers monthly

Women in STEM

Duquesne University

Graduate Assistant (2019-2020)

Biology Graduate Representative (2018-Present)

- Organized undergraduate mentor groups
- Planned monthly meetings and send out emails to email server
- Organized and designed STEM outreach to local K-12 schools, recruited a team of volunteers, and implemented and executed effective activity design

Graduate Students of Biological Sciences Organization

Duquesne University

Historian (June 2018-May 2019)

Seminar Social Officer (August 2017-June 2018)

- Maintained and Updated the Duquesne University website for the graduate student page and the GSoBS page
- Maintained the GSoBS Facebook page
- Photographed and documented all graduate student events, developing an archive for the academic year
- Coordinated educational and networking events

WRITTEN AND ORAL COMMUNICATION SKILLS

Associate Editor

Journal of the American Society of Mining and Reclamation (JASMR)

- Lead the ecology division of the professional journal, in charge of finding reviewers for submitted articles and approving final drafts

Science Communication

National Center of Science Education

- *Teaching Assistant*: Responsible for coaching current graduate fellows through their assigned research projects, activity designs, and grant writing
- *Science Communication Graduate Fellow*: designed activities for explaining complex science concepts following formal training in scientific literacy, IRB applications, and grant writing

Duquesne University

- *D.U. Quark Internship*: creator and author of the column "Science in my Backyard" for the journal D.U. Quark
- *Science Communication Workshop*: taught an hour workshop to 35 participants on effective communication skills when presenting science to the public

Phipps Conservatory

- *Science Communication Fellowship*: attended a workshop that is facilitated by the science education department at Phipps Conservatory and Botanical Gardens that teaches skills to communicate science in a way that breaks down barriers between the scientific community and the public

Publications

Valkanas, M.M. and Trun, N.J. (2018). A seasonal study of a passive abandoned coalmine drainage remediation system reveals three distinct zones of contaminant levels and microbial communities. *MicrobiologyOpen*. 2018:e585. <https://doi.org/10.1002/mbo3.585>

Ly, T.T., Wright, J.R., Weit, N., Mclimans, C.J., Ulrich, N., Tokarev, V., **Valkanas, M.M.**, Trun, N., Rummel, S., Grant, C.J. and Lamendella, R., (2019). Microbial Communities Associated with Passive Acidic Abandoned Coal Mine Remediation. *Frontiers in Microbiology*, 10, p.1955.

M.M. Valkanas and N.J. Trun. Limited carbon sources prevent sulfate remediation in a circum-neutral abandoned mine drainage system. **(In Review)**.

M.M. Valkanas, T. Rosso, and N.J. Trun. Symbiotic nitrate-driven iron oxidation in acidic coalmine drainage by *Serratia marcescens* and *Sphingomonas* LK11. **(In Preparation)**.

M.M. Valkanas and N.J. Trun. Spatiotemporal changes in bacterial communities in passive remediation systems treating abandoned coal mine drainage. **(In Preparation)**.

Oral Presentations

Notable Presentations (full list upon request)

Valkanas, M. M. and Trun, N.J.. Spatiotemporal Changes in Contaminants Occurring in Three Passive Coal Mine Remediation Systems in Pennsylvania. Presented at the 2019 Joint Conference of the National Association of Abandoned Mine Land Programs/Pennsylvania Abandoned Mine Reclamation /National Association of State Land Reclamationists'.

Valkanas, M. M. and Trun, N.J.. The influence of Bacteria on Passive Remediation Systems. Presented at the 2019 National Meeting of the American Society of Mining and Reclamation. **Awarded first place for oral presentation.**

Valkanas, M. M. and Trun, N.J.. An in vitro system to study the microbial impacts on a passive remediation system. Presented at 2018 Allegheny Branch of American Society for Microbiology. **Awarded first place for oral presentation.**

AWARDS AND HONORS

Grants

2019 Geological Society of America *On to the Future Program* (\$745)

2019 Sigma Xi Grants in Aid of Research (GIAR) (\$150)

2019 Duquesne University Bayer Fellowship (\$13,375)

2019 Geological Society of America, Graduate Student Research Grant (\$2450)

- **Specialized Gould Research Grant Awarded**

2019 National Center for Science Education Science Outreach Fellowship (\$9000)

2017 Geological Society of America, Graduate Student Research Grant (\$1325)

Awards

2020 Biological Sciences Graduate Student of the Year, Duquesne University

2020 American Society of Mining and Reclamation Memorial Scholarship (\$2,000)

2019 Kenneth N. Weaver Student Travel Award, Northeastern Section of the Geological Society of America (\$150)

2019 Western Pennsylvania Coalition for Abandoned Mine Reclamation Travel Award (\$100)

2018 Allegheny Branch of American Society for Microbiology Travel Award (\$100)

2018 American Society of Mining and Reclamation Travel Award (\$250)

2018, 2020 Graduate Student Award for Excellence in Teaching Finalist

PROFESSIONAL DEVELOPMENT

Data Analysis Workshops

PATRIC Bioinformatics Resource Center Workshop

(University of Pittsburgh, February 2018)

Illumina MiSeq Training

(University of Pittsburgh, December 2018)

Introduction to 'tidy' data and statistics in R Studio

(Duquesne University, November 2018)

Getting Started in SPSS

(Duquesne University, October 2018)

R for Biologists

(University of Pittsburgh, June-August 2017)

An Introduction to QGS and Geoscience Application

(Geological Society of America, March 2017)